

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claims 1-41. (cancelled)

Claim 42 (previously presented) A monolithically integrated semiconductor device comprising:

a hetero-junction bipolar transistor having at least one electrode contact layer which contacts directly with at least one of collector, base and emitter electrodes; and

at least one passive device comprising a metal-insulator-metal capacitor having a bottom electrode, a capacitive dielectric layer and a top electrode,

wherein one of said bottom and top electrodes and one of said collector, base and emitter electrodes comprise the same metal layer and have a same thickness.

Claim 43 (cancelled)

Claim 44 (cancelled)

Claim 45 (currently amended) The device as claimed in claim 42, wherein said at least passive device further comprises:

a resistive element which comprises[[:] at least a resistive element layer; and at least a resistive element electrode.

Claim 46 (cancelled)

Claim 47 (previously presented) A monolithically integrated semiconductor device comprising:

a hetero-junction bipolar transistor having at least one electrode contact layer which contacts directly with at least one of collector, base and emitter electrodes;

a resistive element which comprises at least a resistive element layer and at least one resistive element electrode; and

a metal-insulator-metal capacitor which comprises a bottom electrode, a capacitive dielectric layer, and a top electrode,

wherein said electrode contact layer, said resistive element layer and said capacitive dielectric layer comprise the same compound semiconductor layer, and

wherein said resistive element electrode, said top electrode and said at least one of collector, base and emitter electrodes comprises the same metal layer having a same thickness.

Claims 48-52 (cancelled)

Claim 53 (currently amended) A monolithic integrated semiconductor device comprising:

a hetero-junction bipolar transistor having at least one electrode contact layer that directly contacts with at least one of collector, base and emitter electrodes;

at least one passive device having at least one passive device electrode and at least one resistive layer;

a plurality of first level interconnects directly contacting each of said collector, base, emitter and device electrodes; and

a plurality of coplanar second level interconnects, perpendicular to and directly contacting said plural first level interconnects,

wherein said electrode contact layer and said resistive layer are the same material.

54. (new) A monolithically integrated semiconductor device comprising:

a substrate (10);

a hetero-junction bipolar transistor (100) on said substrate (10) and having at least one electrode (20, 21, 22) which contacts directly with at least one of a collector (13), a base (14) and an emitter (15); and

a passive device (200, 300) on said substrate (10) having the same material as said at least one electrode.

55. (new) The device as claimed in claim 54, wherein said passive device (200, 300) has at least one electrode (23, 27) and said at least one electrode (20, 21, 22) which directly contacts one of said collector (13), base (14) and emitter (15) comprises the same metal layer.

56. (new) The device as claimed in claim 54, wherein said passive device (200, 300) comprises:

a resistive element (200) which comprises at least a resistive element layer (24) and at least a resistive element electrode (26); and

a metal-insulator-metal capacitor (300) which comprises a bottom electrode (23), a capacitive dielectric layer (25) and a top electrode (27).

57. (new) The device as claimed in claim 56, wherein said at least one electrode (20, 21, 22) comprises a base electrode contact layer (18) which contacts directly with a base electrode (21).

58. (new) The device as claimed in claim 57, wherein said base electrode contact layer (18), said resistive element layer (24) and said capacitive dielectric layer (25) comprise the same compound semiconductor layer.

59. (new) The device as claimed in claim 58, wherein said base electrode (21) and said bottom electrode (23) comprise the same metal layer.

60. (new) The device as claimed in claim 58, wherein said base electrode (21) and said top electrode (27) comprise the same metal layer.

61. (new) The device as claimed in claim 58, wherein said base electrode (21) and said resistive element electrode (26) comprise the same metal layer.

62. (new) The device as claimed in claim 56, wherein said at least one electrode (20, 21, 22) comprises a collector electrode contact layer (19) which contacts directly with a collector electrode (22).

63. (new) The device as claimed in claim 62, wherein said collector electrode contact layer (19), said resistive element layer (24) and said capacitive dielectric layer (25) comprise the same compound semiconductor layer.

64. (new) The device as claimed in claim 63, wherein said collector electrode (22) and said bottom electrode (23) comprise the same metal layer.

65. (new) The device as claimed in claim 63, wherein said collector electrode (22) and said top electrode (27) comprise the same metal layer.

66. (new) The device as claimed in claim 63, wherein said collector electrode (22) and said resistive element electrode (26) comprise the same metal layer.

67. (new) The device as claimed in claim 62, wherein said at least one electrode (20, 21, 22) comprises an emitter electrode (20).

68. (new) The device as claimed in claim 67, wherein said emitter electrode (20) and said bottom electrode (23) comprise the same metal layer.

69. (new) The device as claimed in claim 67, wherein said emitter electrode (20) and said top electrode (27) comprise the same metal layer.

70. (new) The device as claimed in claim 67, wherein said emitter electrode (20) and said resistive element electrode (26) comprise the same metal layer.

71. (new) The device as claimed in claim 54, further comprising:

at least one electrode contact layer which contacts directly with said at least one electrode,

wherein said passive device has at least one passive device electrode having two resistive elemental electrode contacts and at least one resistive element layer, contacting said two resistive element electrode contacts, and

wherein said at least one electrode contact layer and said resistive layer comprise the same material.

72. (new) The device as claimed in claim 71, wherein said passive device electrode and said at least one electrode comprise a same metal layer.

73. (new) The device as claimed in claim 71, wherein said passive device further comprises:

a resistive element which comprises at least a resistive element layer and at least a resistive element electrode; and

a metal-insulator-metal capacitor which comprises a bottom electrode, a capacitive dielectric layer and a top electrode.

74. (new) The device as claimed in claim 73, wherein said at least electrode contact layer comprises a base electrode contact layer which contacts directly with said base electrode.

75. (new) The device as claimed in claim 74, wherein said base electrode contact layer, said resistive element layer and said capacitive dielectric layer comprise the same compound semiconductor layer.

76. (new) The device as claimed in claim 75, wherein said base electrode and said bottom electrode comprise the same metal layer.

77. (new) The device as claimed in claim 75, wherein said base electrode and said top electrode comprise the same metal layer.

78. (new) The device as claimed in claim 75, wherein said base electrode and said resistive element electrodes comprise the same metal layer.

79. (new) The device as claimed in claim 73, wherein said at least electrode contact layer comprises a collector

electrode contact layer which contacts directly with said collector electrode.

80. (new) The device as claimed in claim 79, wherein said collector electrode contact layer, said resistive element layer and said capacitive dielectric layer comprise the same compound semiconductor layer.

81. (new) The device as claimed in claim 80, wherein said collector electrode and said bottom electrode comprise the same metal layer.

82. (new) The device as claimed in claim 80, wherein said collector electrode and said top electrode comprise the same metal layer.

83. (new) The device as claimed in claim 80, wherein said collector electrode and said resistive element electrodes comprise the same metal layer.

84. (new) The device as claimed in claim 73, wherein said at least electrode contact layer comprises an emitter electrode contact layer which contacts directly with said emitter electrode.

85. (new) The device as claimed in claim 84, wherein said emitter electrode contact layer, said resistive element layer and said capacitive dielectric layer comprise the same compound semiconductor layer.

86. (new) The device as claimed in claim 85, wherein said emitter electrode and said bottom electrode comprise the same metal layer.

87. (new) The device as claimed in claim 85, wherein said emitter electrode and said top electrode comprise the same metal layer.

88. (new) The device as claimed in claim 85, wherein said emitter electrode and said resistive element electrodes comprise the same metal layer.

89. (new) The device as claimed in claim 54, further comprising:

an insulating film on said substrate covering said hetero-junction bipolar transistor and said passive device; and

interconnect conducts penetrating said insulating film and making electrical contact to said at least one electrode of said hetero-junction bipolar transistor and to an electrode of said passive device.